

Feasibility for
New Onsite Wastewater Dispersal Areas

Scottsville Elementary School Property
TMP 130-25P

Albemarle County Schools
Building Services Department
2751 Hydraulic Road
Charlottesville, VA 22901

Analysis Performed By:

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Investigation

The Scottsville Elementary School property was investigated to determine new suitable areas for onsite dispersal of treated wastewater and the feasibility of the site's ability to accept greater effluent quantities from an elementary school expansion to either 250 students or 450 students. The investigation included topographical assessment, landscape suitability, soil identification through auger borings, and saturated hydraulic conductivity measurements. The investigation did not include a capacity analysis of the existing drainfield.

Topographical and Landscape Assessment

The property has a few areas that are unusable for onsite dispersal of treated wastewater due to either topographical features, their locations in Albemarle County's critical resource protection areas, or their proximity to drinking water sources.

- The North West section of the property is in a low lying drainage area that is unacceptable for drainfield use.
- Located within the property is a deeded well lot with a community well (TMP 130-25P1).
- A site drainage outfall is located on the east side of the property.
- The property has an area with critical slopes over 25% primarily adjacent to Route 20.

These sections are highlighted in Exhibit 1.

Available Soils for Onsite Dispersal

Steve Gooch AOSE identified 6 potential drainfield areas on the property. The approximate locations of the dispersal areas are shown in Exhibit 2. A summary of the drainfield areas are presented below.

Drainfield Area	Estimated Average Slope (%)	Area		Depth of Installation (inches)	Estimated Infiltration Area Available (sqft)	Type of Drainfield
		Width (ft)	Length (ft)			
1a	10	50	105 to 115	12	5,250	Drip Dispersal
1b	10	100	80 to 100	12	8,000	Drip Dispersal
2	5	111	100	48 to 60	3,900	Pressure Trench
3a	5	48	100	48 to 60	1,800	Pressure Trench
3b	5	48	100	48 to 60	1,800	Pressure Trench
3c	5	48	50	48 to 60	900	Pressure Trench
4	2	100	170	48 to 60	6,120	Pressure Trench
5a	7	84	100 to 150	30	3,600	Pressure Trench
5b	7	12	50	30	300	Pressure Trench
5c	7	39	50 to 100	30	1,200	Pressure Trench
6a	15	84	80	12	6,720	Drip Dispersal
6b	15	40	50	12	2,000	Drip Dispersal

Old Dominion Engineering analyzed the hydraulic saturated conductivity (Ksat) of the dispersal soil horizon with a Johnson Permeameter in order to determine preliminary long term acceptance rates of the identified drainfield areas. Tests were run at the infiltration zone and below.

Summary of Ksat results

Area	Depth (inch)	Representative Saturated Hydraulic Conductivity (cm/day)
1 and 6	12	14.0
2, 3, and 4	48 to 60	4.0
2, 3, and 4	96	1.4
5	30	18.8

Allowable Student Site Occupancy and Wastewater Treatment Requirements

Based upon the soil type, representative Ksats, area available, and depth of suitable soils, the potential drainfield areas on the Scottsville School property will require secondary treatment in order to meet Virginia Department of Health regulations and provide for system reliability/longevity and groundwater protection. This means that additional treatment will be needed beyond a typical settling tank.

The following components will require removal in the wastewater treatment process:

- Biochemical Oxygen Demand (<30 mg/l BOD)
- Suspended Solids (<30 mg/l BOD)
- Fats, Oils, and Grease

The following areas were excluded from our analysis:

- Area 6 was not included in our analysis due to the shallow installation and its proximity to the preliminary planned school expansion.
- The existing drainfield was not included in our analysis due to its age, uncertain condition, and uncertain as-built status.

Based upon our analysis, it appears that the amount of secondary treated effluent that can be disposed of on the property will accommodate the existing elementary school as well as an expansion of the elementary school to either the 250 student or 450 student scenario. This will allow for a one hundred percent reserve area as required by the Virginia Department of Health (VDH).

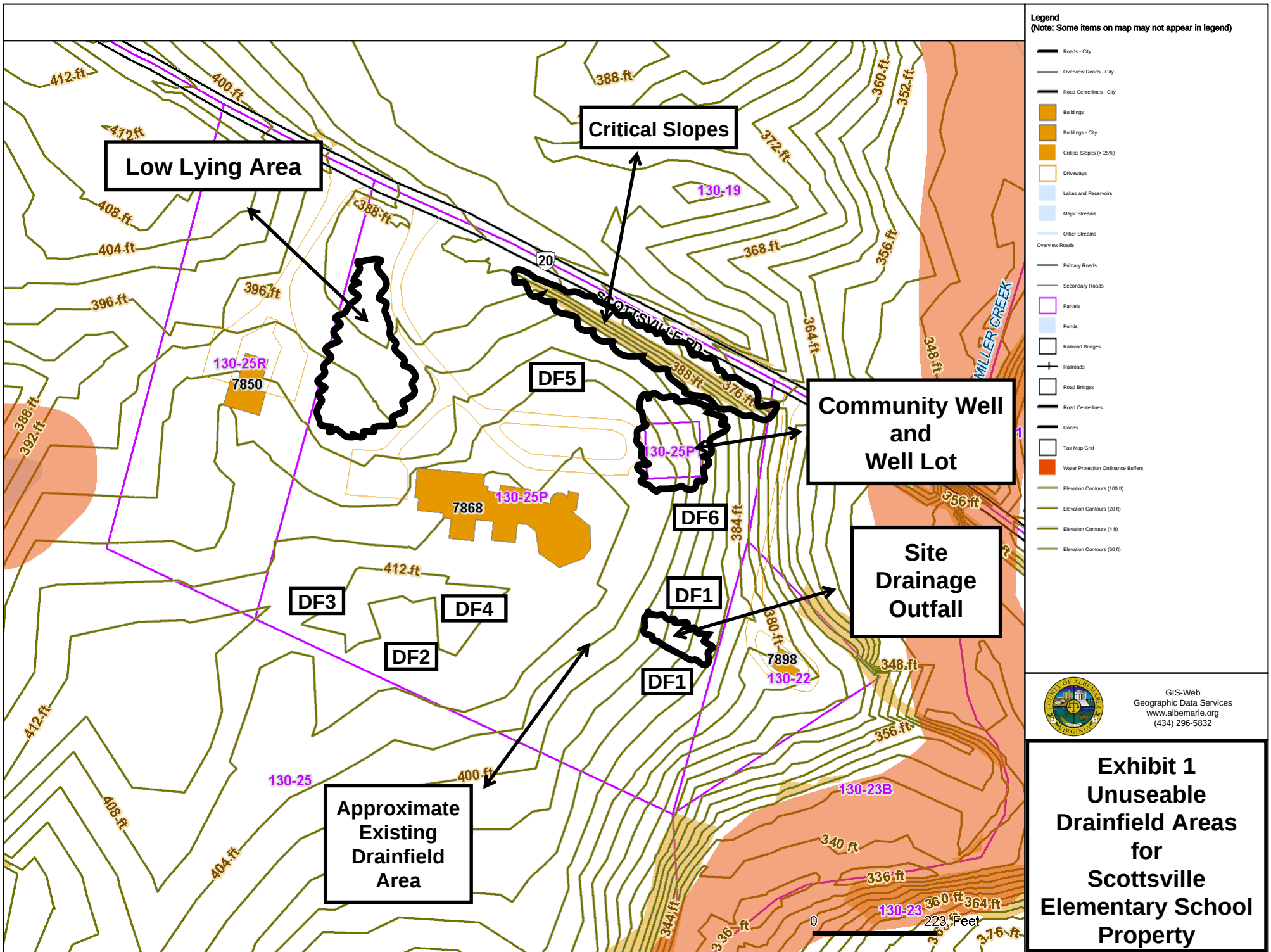
A pressure distribution system will distribute the treated effluent to each of the areas (1, 2, 3, 4, and 5). Since the drainfields for the Scottsville School property will be dispersed around the site they will not be classified as a “Mass Drainfield” under Virginia Department of Health Regulations. Each of the areas will include both primary drainfield and reserve drainfield components.

Important site limitations to consider with the available drainfield areas are:

- If drainfield area 5 is installed under a parking area it will require sufficient fill to allow for 42” cover under paved parking surfaces as required by VDH regulations.
- Dripfield areas (Area 1 and 6) are shallow installations. This will prevent the use of these areas for any other activities. These areas can potentially stay wooded as they are now depending upon the final dispersal area design.

Limitations

The soil characterization and analysis reflects our preliminary opinion as to the suitability of soils in the areas investigated to support an onsite wastewater system under the current VDH regulations. Final approval of any system will rest with the Albemarle County and State Health Department and be regulated under VDH Regulations.



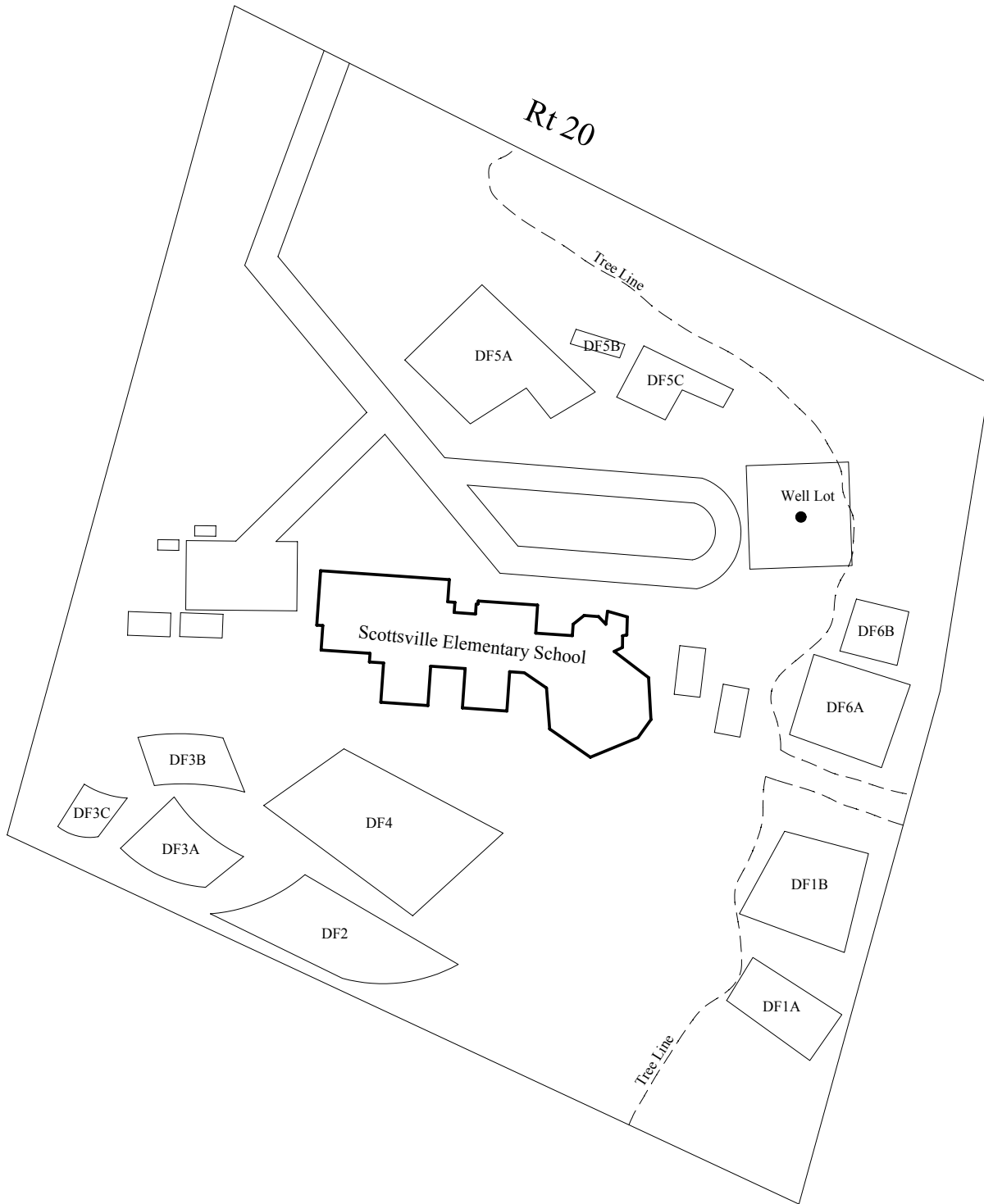


Exhibit 2
Approximate Drainfield Locations
Scottsville Elementary School Property
NTS